

Seat	
No.	

# M.Sc. (Part – I) (Semester – II) Examination, 2015 GENETICS (Paper – I) Regulation of Gene Expression and Developmental Genetics

Day and Data: Thursday, 16-4-2015	Max. Marks : 70
Day and Date: Thursday, 16-4-2015	IVIAX. IVIAINS. /C

Time: 11.00 a.m. to 2.00 p.m.

Instructions: 1) All question of Section I are compulsory.

- 2) Answer any four questions from Section II.
- 3) All questions carry equal marks.
- 4) **Draw** neat and labelled diagrams **wherever** necessary.

			SEC	TIC	DN – I		
1.	,	ewrite the following en below :	ng sentences by	ch ch	oosing the m	ost correct alternative	7
	i)	Ara Operon is in	nitiated when the	ere	is		
		a) Presence of	Arabinase	b)	Absence of A	Arabinase	
		c) Presence of	Arabinose	d)	Absence of A	Arabinose	
	ii)		genes are respo			e metabolic function	
		a) Regulatory		b)	Housekeepin	ng	
		c) Inducer		d)	Repressor		
	iii)		triggers apopto	sis	to prevent dup	plication of damaged cell.	
		a) Cyclins	b) CDK	c)	P53	d) pRB	
	iv)	expression in p	•	ed a	s a Model Sys	stem for investigating gene	
		a) SV40	b) Gal gene	c)	18s RNA	d) CaMV 35 s	
	v)	The immediate as	-	cec	d after the fusi	ion of 2 gamets is known	
		a) Embryo	b) Zygote	c)	Morula	d) Blastula	

**SLR-QP - 300** vi) The *Arabidopsis Thaliana* belongs to \_\_\_\_\_ a) Gymnosperm b) Angiosperm c) Pteridophytes d) Algae vii) Development of segments in *Drosophila* is controlled by \_\_\_\_\_ a) Homeotic Genes b) Lethal Genes c) Zygotic genes d) Maternal Gene B) Define the following terms: 7 i) Interferon ii) Codon iii) Heat Shock gene iv) Cleavage v) Embryogenesis vi) Maternal Genes vii) CaMV 35 s promoter. SECTION - II Answer any four: 14 2. Explain the control of lysis and lysogeny in Lambda phage. 3. Describe the cell differentiation in *Dictostylium*. 14 4. Write an essay on cell lineage and mosaic development in Caenorhabditis elegans. 14 5. Explain the regulation of cell cycle in eukaryotes. 14 6. Answer any two of the following: 14 a) Illustrate the embryogenesis and seed development in *Arabidopsis thaliana*. b) Explain the structural changes in chromatin as a part of gene regulation in eukaryotes.

a) Explain the Lac Operon gene regulation in prokaryotes.

7. Answer any two of the following:

b) Discuss the genes involved in flower development of *Arabidopsis thaliana*.

c) Write a note on homeotic genes specifying segment identity in *Drosophila*.

14

c) Explain the post transcriptional gene regulation in Eukaryotes.

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**SLR-QP - 301** 



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# M.Sc. (Part – I) (Semester – II) Examination, 2015 GENETICS (Paper – II) Concepts of Biochemistry

Day and Date: Saturday, 18-4-2015	Max. Marks: 70
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Time: 11.00 a.m. to 2.00 p.m.

Instructions: 1) All questions of Section – I are compulsory.

- 2) Answer any four questions from Section II.
- 3) All questions carry equal marks.
- 4) Draw neat and labelled diagrams wherever necessary.

#### SECTION-I

1.	A) Rewri		choosing the correct alternative given
	i) Tł	ne most important epimer of g	lucose is
	a)	fructose	b) xylose
	c)	arabinose	d) galactose
	ii)	reaction is consid	ered as oxidation.
	a)	$Fe^{3+}$ + electron $\rightarrow Fe^{2+}$	
	b)	$Cu^{2+}$ + electron $\rightarrow Cu^{+}$	
	c)	$Fe^{2+} \rightarrow Fe^{3+} + electron$	
	d)	$Fe^{2+} \leftarrow Fe^{3+} + electron$	
	,	is the quantitative disorder in system.	ve expression for the state of randomness
	a)	Gibb's free energy	
	b)	Entrophy	
	c)	Enthalphy	
	d)	Equilibrium constant	

			1 (20)(210 (10)(20)	
SLR-QP – 3	301	-2-		
iv)	The nitrogen atoms of pyrimi	dine nucleo	tide are provided by	
i	a) glutamate			
	b) glutamate and aspartate			
(	c) glutamine and aspartate			
(	d) glutamine			
•	From stoichiometry of oxidat produces		orylation one NADH mol	ecule
;	a) 3	b)	2.5	
(	c) 2	d)	1.5	
vi)	Keratin protein is an example	e of	protein.	
;	a) structural	b)	contractile	
	c) catalytic	d)	hormonal	
	The enzyme inhibition in which isinhibition.	ch Km incre	ases and Vmax remains	constant
;	a) competitive	b)	uncompetitive	
	c) non-competitive	d)	mixed type	
B) Defi	ine the following terms :			7
i) '	Vitamins			
ii)	Redox potential			
iii) (	CAM pathway			
iv)	De Novo biosynthesis			

vi) Peptide bond

vii) Steroids.

v) Active site of enzyme

SECTION - II

## Answer any four:

2. Give the complete classification of amino acids with their structure.

3. Describe the oxidative phosphorylation. Add a note on structure of ATPase. 14

c) Derive an equation of Michaelis-Menten for steady state kinetics.



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#### M.Sc. – I (Semester – II) Examination, 2015 GENETICS (Paper – III) Advanced Microbial Genetics

Day and Date : Tuesday, 21-4-2015	Max. Marks: 70
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Time: 11.00 a.m. to 2.00 p.m.

Instructions: 1) Section I is compulsory.

- 2) From Section II attempt any four.
- 3) All questions carry equal marks.
- 4) Figures to **right** indicate **full** marks.
- 5) **Draw** neat and labelled diagrams.

				S	SECTIC	)N – I			
1.	A)		write the follow Which gene is	_	-	_			<b>7</b> bacterial DNA ?
			a) xis	b) int	c)	pac	d)	gag	
		2)	The bacterioph known as		ackage	es spec	ific portio	n of bacte	erial DNA is
			a) prophage		b)	viruler	nt phage		
			c) transducing	phage	d)	avirule	ent phage		
		3)	Number of asc	ospores forr	ned in S	Saccha	romyces (	cerevisiae	e is
			a) 4	b) 8	c)	16	d)	2	
		4)	The fluctuation	test carried	out by I	_uria ar	nd Delbru	ck showe	d that
			a) mutations a	re spontane	ous				
			b) mutations a	are induced b	y virus	upon e	xposure		
			c) bacteria flu	ctuate betwe	en sen	sitivity	and resist	ance	
			d) viruses are	living entitie	es				
		5)	Sex pilus in co	njugation is p	oroduce	d by	· · · · · · · · · · · · · · · · · · ·	_	
			a) donor bacte	eria					
			b) recipient ba	cteria					
			c) donor and r	ecipient bac	teria				
			d) None of the	ese					



	6)	Competency in I	oacteria is obse	erved during		
		a) Lag	b) Stationary	c) Log	d) Death	
	7)				omosomal genes with	
		greater efficienc	-		م/ ٦ <sup>'</sup>	
		a) Hfr	D) F+	c) F-	d) F'	
	•	swer the followin	_			7
	,	Electrotransform	nation			
	,	Virulent phage				
	,	Competency				
	,	Mutation Mutagens				
	•	Episome				
	,	Abortive transdu	uction.			
	- /					
			SEC	TION – II		
Att	tempt <b>a</b>	ny four :				
2.	Write	an essay on conj	ugation.			14
3.	Explai	n the yeast matir	ng-type switchin	ng mechanism.		14
4.	Descr	be in detail trans	formation.			14
5.	Explai	n in detail the imp	oortance of fun	gi in biotechnolo	gy.	14
6.	Answe	er <b>any two</b> of the	following:			14
	1) De	scribe the metho	d for isolation o	of auxotrophic m	utants.	
	2) De	scribe life cycle o	of fungi.			
	3) Exp	olain the phage P	1 mediated tra	nsduction.		
7.	Answe	er <b>any two</b> of the	following:			14
	1) De	scribe interrupted	d mating techni	que.		
	2) Wr	ite a note on fluc	tuation test.			
	3) Exp	olain chemical m	ediated transfo	rmation.		



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#### M.Sc. – I (Semester – II) Examination, 2015 GENETICS (Paper – IV) Plant Breeding and Tissue Culture

Day and Date: Thursday, 23-4-2015 Max. Marks: 70

Time: 11.00 a.m. to 2.00 p.m.

Instructions: 1) Section I is compulsory.

- 2) From Section II attempt any four.
- 3) All questions carry equal marks.
- 4) Figures to **right** indicate **full** marks.
- 5) Draw neat and labeled diagrams.

#### SECTION-I

1.	A) Re	write the following senten	ces by using co	orrect alternative.	7
	1)	A plant breeder wants to do first	develop a dise	ease resistant variety,	what he should
		a) mutation	b)	selection	
		c) hybridization	d)	production of crop	
	2)	Hybrids which are superior	or over parents	are called	
		a) inbreeding	b)	dominant	
		c) recessive	d)	heterosis	
	3)	Major food crops have or	ginated mainly	from	_
		a) ocean	b)	mountain	
		c) desert	d)	plain	
	4)	In micropropagation, virus	s free plants car	n be obtained through _	
		a) shoot tip culture	b)	haploid culture	
		c) protoplast culture	d)	embryo culture	
	5)	Which is faster method of	f rapid clonal pı	opagation	culture.
		a) callus	b)	suspension	
		c) embryo	d)	anther	

7.



	6)	hormone is used to o	bta	ain roots in tissue culture.	
		a) auxin	b)	cytokinin	
		c) gibberline	d)	ethylene	
	7)	Triploid plants can be generated from			
		a) embryo	b)	endosperm	
		c) pollen	d)	leaf	
	B) An	swer the following terms :			7
	1)	Hybrids			
	,	Resources			
	•	Hybridization			
	•	Probes			
	•	Invitro			
	-	Protoplast			
	7)	Cybrods.			
		SECTION	— II	l	
Att	tempt <b>a</b>	any four :			
2.	Mentio	on plant diseases and describe defens	sive	e mechanism in plants.	14
3.	Explai	in breeding for cross pollinated crop p	lan	ts.	14
4.	Explai	in the method for haploid production a	nd	give its application.	14
5.	Descr	ibe in detail protoplast fusion.			14
6.	Answe	er <b>any two</b> of the following :			14
	1) Illu	strate centers of origin of crop plants			
	2) Ex	plain role of heterosis in breeding.			
	3) De	scribe marker assisted breeding.			
7.	Answe	er <b>any two</b> of the following :			14
	1) Ex	plain the role of hormones in plant tiss	sue	culture.	
	2) De	scribe the method for production of se	co	ndary metabolites.	
	•	ite in brief account on somaclonal var		•	
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M.Sc. – II (Semester – II GENET Paper – I : Immu	ics
Day and Date : Wednesday, 15-4-2015	Max. Marks: 100
Time: 3.00 p.m. to 6.00 p.m.	
Instructions: 1) Part I, Question No. I is co 2) Attempt any four question 3) Answers to Part I and Part	
booklet.	
4) Figures to the <b>right</b> indica	ate <b>full</b> marks.
PART	– I
1. A) Rewrite the following sentences by usi	ng correct alternative. 10
1) Reaginic immunoglobulin is	
A) IgG B) IgM	C) IgD D) IgE
2) The reaction of soluble antigen with	antibody is known as
A) Agglutination	B) Precipitation
C) Flocculation	D) Complement fixation
3) Interleukin-1 is produced by	D) D hymruba ay ta
<ul><li>A) T-helper cell</li><li>C) Monocyte</li></ul>	<ul><li>B) B-lymphocyte</li><li>D) Parietal cells</li></ul>
•	b) I alletal cells
<ul><li>4) Active immunity is not acquired by</li><li>A) Infection</li></ul>	B) Vaccination
C) Subclinical infection	D) Immunoglobulin transfer
<ol> <li>5) Arthus reaction is an example of</li> </ol>	
A) Type I	B) Type II
C) Type III	D) Type IV

C) Alpha chains only B) Define the following terms:

A) Alpha and beta chains

10

B) Alpha and beta macroglobulin

D) Beta chains only

- 1) Subunit vaccine
- 2) Isograft
- 3) Innate immunity
- 4) Attenuation
- 5) HLA antigens

PART - II

Answer any four of the following:

2. Describe the structure and functions of IgM and IgG.

20

3. Discuss the genetic basis of antibody diversity.

20

4. Write an essay on autoimmune diseases.

	······································	0 <u>2</u> q.	00.
5.	Write short answer of <b>any two</b> from the following:		20
	1) Discuss the theories of antibody formation.		
	2) Describe the classical complement activation pathway.		
	3) Compare and contrast between active and passive immunity.		
6.	Write short notes on any four of the following:		20
	1) Types of infections		
	2) B-lymphocytes		
	3) ELISA test		
	4) Types of graft		
	5) Applications of monoclonal antibodies		
	6) Determination of avidity and affinity constants.		



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# M.Sc. – II (Semester – IV) Examination, 2015 GENETICS

Paper – I : Genetic Engineering (Old)

Day and Date : Thursday, 16-4-2015 Total Marks : 100

Time: 3.00 p.m. to 6.00 p.m.

*Instructions*: 1) Section – I is compulsory.

- 2) From Section II attempt any four.
- 3) All questions carry equal marks.
- 4) Figures to the right indicate full marks.
- 5) Draw neat and labelled diagrams.

#### SECTION - I

1. A)	Rewrite the following sentences by using correct alternative.					
	1)	1) Denaturation involves				
		a) Heating between 90-98°C	b)	Heating between 40-60°C		
		c) Heating between 60-72°C	d)	Heating between 40-50°C		
	2)	Interferons are				
		a) Antiviral proteins	b)	Complex proteins		
		c) Antibacterial proteins	d)	Anticancer proteins		
	3)	Transfer of protein from agarose gel to	o ny	lon membrane is		
		a) Southern blotting	b)	Western blotting		
		c) Eastern blotting	d)	Northern blotting		
	4)	A plasmid cloning vector should corexcept	ntaiı	n all of the following sequences		
		a) Origin of replication	b)	Inducible promoter		
		c) Selectable marker gene	d)	Multiple cloning site		



5)	Synthetic gene can be made for			
	a) Somatostatin	b)	Human insulin	
	c) Interferon	d)	All of the above	
6)	A segment of DNA reads the same	forw	ard and backward is called	
	a) Palindromic DNA	b)	Complimentary DNA	
	c) Plasmid DNA	d)	Copy DNA	
7)	Chain termination methods of DNAs	sequ	encing utilize	
	a) 2, 3 di deoxynucleotides	b)	3, 4 di deoxynucleotides	
	c) 4, 5 di deoxynucleotides	d)	5, 6 di deoxynucleotides	
8)	Microprojectiles are			
	a) Tungsten gold particles	b)	Copper magnesium	
	c) Silver ions	d)	All of the above	
9)	Which of the following chemical is gel	used	for staining the DNA in agarose	
	a) EtBr	b)	CSBr	
	c) CsCl	d)	Acetocarmine	
10)	cDNA stands for			
	a) Cohesive DNA	b)	Complimentary DNA	
	c) Coupling DNA	d)	Common DNA	
B) Ar	nswer the following terms :			10
1)	Restriction enzyme			
2)	Gene			
3)	rDNA			
4)	Screening			
5)	Primers.			



## SECTION-II

2.	What are vectors? Explain in detail the properties and structure of plasmids as	00
	a vector.	20
3.	Explain in detail Sanger's method of DNA sequencing.	20
4.	What is gene library? Describe construction of genomic and cDNA library.	20
5.	Answer any two of the following:	20
	1) Explain the method for designing of E. Coli expression vector.	
	2) Describe the method for isolation of vector DNA.	
	3) Describe in detail RFLP.	
6.	Write short notes on <b>any four</b> :	20
	1) Phagmids as a cloning vector.	
	2) Electroporation.	
	3) Production of recombinant insulin.	
	4) Indirect screening of recombination.	
	5) Amplification.	
	6) DNA chips.	



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#### M.Sc. (Part – II) (Semester – IV) Examination, 2015 GENETICS (Old) (Paper – II) Molecular Medicine

Day and Date : Saturday, 18-4-2015 Max. Marks : 100

Time: 3.00 p.m. to 6.00 p.m.

Instructions: 1) All question of Section I are compulsory.

- 2) Answer any four questions from Section II.
- 3) All questions carry equal marks.
- 4) Draw neat and labelled diagrams wherever necessary.

			SECTIO	N – 1		
1.	•	ewrite the followir low :	ng sentences by ch	oosing the cor	rect alternative given	10
	1)		_ cells have prope	rty of division a	and differentiation.	
		a) Cancer	b) Germ	c) Somatic	d) Stem	
	2)	their responses		how people's	genetic makeup affects	
		a) Nanomedicin	е	b) Genomed	dicine	
		c) Pharmacoge	netic	d) Generic r	medicine	
	3)	Epigenetic modi	fication involves			
		a) Modification	of DNA sequence			
		b) Modification	of Histone proteins			
		c) Modification	of transcription fac	tors		
		d) Modification	at translation mach	inery		
	4)	ge	ne is damaged in C	ystic Fibrosis.		
		a) CFTC	b) CFRC	c) CFTR	d) CFRT	
	5)	Osteogenesis Ir	nperfecta is a disea	ase caused du	e to defect in	
		a) Collagen		b) Hemoglol	bin	
		c) Immunoglobi	ulin	d) Mitochon	dria	

	6)	is a characteristi	ic of Brutons syndro	me.	
		a) Weak Bones			
		b) Weak Immune system			
		c) Weak oxygen carrying capacity	′		
		d) Weak Muscle			
	7)	In Genetics term, Ducenne Muscula	r Dystrophy is	type of disease.	
		a) Autosomal Dominant	b) Autosomal Re	cessive	
		c) X linked Dominant	d) X linked reces	sive	
	8)	Cardiovascular disease involves p	roblems in		
		a) Nerves b) Muscles	c) Arteries	d) Lungs	
	9)	In Gene therapy retrovirus vectors	can only be used for	cells.	
		a) Dividing b) Non Dividing	•	d) Cancer	
	10)	Nerve cell is a type of			
		a) Unipotent b) Pluripotent	c) Multipotent	d) Totipotent	
	B) An	swer in short :			10
	1)	Define Embryonic Stem Cells.			
	2)	Define minisatellite.			
	3)	Explain the use of Adenoviruses in	Gene therapy.		
	4)	Mention any 2 types of cardiovasc	ular disease.		
	5)	Explain in short Osteogenesis Imp	erfecta disease.		
		SECTIO	N-2		
Ar	nswer <b>a</b>	any 4 of the following.			
2.	Give	detailed account on haemoglobinopa	athies.		20
3.	Write therap	a note on gene therapy. Explain its pies.	importance compar	red to traditional	20
4.		a note on Genetic Mutation. Compar ain of function mutation.	re and Explain Loss	of function mutation	20



5.	Write short answers	(any 2).	
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20

- 1) Explain Fluorescent In-situ Hybridization.
- 2) Explain Stem cells and their classification.
- 3) Write a note on Collagen and explain the diseases associated with it.
- 6. Write short notes (any 4).

20

- 1) Epigenetics
- 2) Outcome of Human Genome Project
- 3) Agammaglobulinaemia
- 4) Severe combined immune deficiency syndrome
- 5) DNA profiling
- 6) Pharmacogenetics.

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# M.Sc. II (Semester – IV) Examination, 2015 GENETICS

nmental Biotechnology (Old)
Total Marks : 100
any four. Il marks. full marks. iagrams.
DN – I
ing correct alternative:  rypsinization is°C  c) 6 d) 8  n process takes place by use of plant
b) Composting d) All of the above to degrade environmental pollutants. b) Biofiltration d) Bioaccumulation d for the mechanical disaggregation of b) Syringing d) All of the above by b) Synechococcus d) All of the above

	6)	Hybridoma technology is discovered	d by		
		a) Wilmut	b) Mc Klintock		
		c) Kohler and Milstein	d) Campbell		
	7)	Acid hydrolysis of lignocelluloses is	carried out by	acid.	
		a) Dil. Sulphuric	b) Dil. Hydrochloric		
		c) Conc. Sulphuric	d) Conc. Hydrochloric		
	8)	Which of the following are used to int	roduce foreign DNA into ar	nimal cells?	
		a) Liposomes	b) Electroporation		
		c) Microinjection	d) All of the above		
	9)	Which of the following is an animal t	tissue culture media ?		
		a) MEM			
		b) RPMI 1640			
		c) CMRL			
		d) All of the above			
	10)	is burning of solid waste a	at very high temperature.		
		a) Bioleaching	b) Pyrolysis		
		c) Composting	d) Bioremediation		
	B) An	swer the following terms :			10
	1)	Bioremediation			
	2)	Cell strain			
	3)	Fermentation			
	4)	Bioleaching			
	5)	Culture media.			
		SECTION	N — II		
At	tempt	any four :			
2.	Expla select	in in detail different techniques of DN ion.	IA transfection. Add a note	on HAT	20
3.	Descr	ibe in detail the treatment of municip	al waste and industrial eff	luents.	20
4.	Write	an essay on composition of animal t	issue culture media.		20



5.	Answer any two of the following:	20
	1) Explain chemical disaggregation of animal tissue.	
	2) Write a note on phytoremediation.	
	3) Describe in detail biogas production.	
_		

# 6. Write short notes on **any four**:

20

- 1) Transgenic mice.
- 2) Downstream processing of expressed proteins.
- 3) Bioleaching of copper ores by microorganisms.
- 4) Environmental significance of GMO's in bioleaching.
- 5) Conversion of sugar to alcohol.
- 6) Hybridoma technology.

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# M.Sc. – II (Semester – IV) Examination, 2015 GENETICS (Paper – I) Genetic Engineering (New-CGPA Pattern)

Day and Date: Thursday, 16-4-2015 Total Marks: 70

Time: 3.00 p.m. to 6.00 p.m.

*Instructions*: 1) Section – I is compulsory.

- 2) From Section II attempt any four.
- 3) All questions carry equal marks.
- 4) Figures to the **right** indicate **full** marks.
- 5) Draw neat and labeled diagrams.

#### SECTION-I

1.	A) Rewrite the following sentences	by using correct alternative :
	1)analysis has	been successfully applied for epidemiology
	of Listera monocytogens.	
	a) RAPD	b) Spectroscopic
	c) DNA sequencing	d) Protein Blotting
	2) Lac Z gene encodes for	enzyme.
	a) Galactosidase	b) β-Galactosidase
	c) Gluconase	d) Glucoronidase
	3) DNA sequencing method.	g method is known as chemical degradation
	a) Sanger's	b) Carrel's
	c) Maxam's and Gilbert's	d) Smith's
	4) Colony hybridization technique	e has been developed by
	a) Murashigue and Skoog	b) Hugh and Birnstil
	c) Mertz and Davis	d) M. Grustein and D. S. Hogness
	5) Pfu DNA polymerase isolated	from
	a) Pyrococcus furiosus	b) Pyrococcus litolaris
	c) Thermococcus furiosus	d) Thermococcus litolaris

SLF	R-QP-	-316		
	6)	vector is used in	both prokaryotes and eukaryotes.	
		a) M13	b) Shuttle	
		c) Cosmid	d) Phagemid	
	7)	_	Ikaline phosphatase is	
		a) 54 Kd	b) 60 Kd	
	_, _	c) 69 Kd	d) 120 Kd	_
	•	efine the following terms:		7
	-	Restriction Enzymes Genomic library		
	•	Vector DNA		
	,	Primers		
	•	Microinjection		
	•	Kinases		
	7)	Nucleases.		
		SEC <sup>-</sup>	TION – II	
Att	tempt a	any four.		
	-	ribe in detail AFLP.		14
3.	Expla	in Automated DNA sequencing n	nethod.	14
4.	Discu	ss construction of C-DNA library	<b>y</b> .	14
5.	Desci	ribe preparation of Genomic and	C-DNA probes and add a note on its	
	applic	cations.		14
6.	Answ	er any two of the following:		14
	1) W	rite a note on synthesis of huma	n interferon.	
	2) E	xplain production of Hepatitis B r	ecombinant vaccine.	
	3) D	escribe in short YAC.		
7.	Answ	er any two of the following:		14
	1) D	iscuss plants as a edible vaccine	9.	
	•	xplain electroporation as direct D		
	•		g method for selection of recombinants.	
	J, <b>J</b>		5	

**SLR-QP - 318** 



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#### M.Sc. (Part – II) (Semester – IV) Examination, 2015 (Paper – III) GENETICS (New CGPA Pattern) Agriculture Science and Seed Technology

Day and Date: Tuesday, 21-4-2015 Max. Marks: 70

Time: 3.00 p.m. to 6.00 p.m.

Instructions: 1) All question of Section I are compulsory.

- 2) Answer any four questions from Section II.
- 3) All questions carry equal marks.
- 4) Draw neat and labelled diagrams wherever necessary.

#### SECTION-I

1. A	•	ewrite the following sentences by low :	/ choosing the correct alternative given
	i)	The diffusion of solvent molecule membrane is called	s into the solution through a semipermeable
		a) Turger pressure	b) Wall pressure
		c) Osmosis	d) Plasmolysis
	ii)	The chief function of Xylem ves	sels in the plant body is
		a) To translocate food materials of plant	s manufactured in the leaves to other parts
		b) To eliminate excess of water transpiration	through the root at night when there is no
		c) To conduct water and minera	al salts
		d) None of these	
	iii)	Auxin-B was extracted from	
		a) Corn and Malt grain oil	b) Human urine
		c) Castor seed	d) Porphyrin palmate



iv)	During seed germination, seed coat ruptures due to
	a) Differentiation of cotyledons
	b) Massive glycolysis in endosperm and cotyledons
	c) Sudden increase in cell division
	d) Massive imbibitions of water
v)	An asymbiotic blue-green algae is
	a) Anabaena
	b) Azolla
	c) Nostoc
	d) All of these
vi)	95 to 99.5% portion of plant tissues are made up of
	a) N, P and K
	b) C, H, O
	c) Ca, Mg, Fe
	d) None of these
vii)	The water holding capacity is highest in
	a) Sandy soil
	b) Clayey soil
	c) Loamy soil
	d) Mixture of sand and loam
B) De	fine the following terms :
i)	Photoperiodism.
ii)	Examples of plant growth hormones.
iii)	Define biofertilizers and give its examples.
iv)	Define heat and cold stress in plants.

v) Give names of phosphorous and iron deficiency diseases in plant.

vi) Role of National Seeds Corporation (NSC).

vii) Applications of Animal Husbandry in agriculture.



## SECTION-II

Ar	nswer <b>any four</b> :	
2.	Write an account on physical, chemical properties of protoplasm of plant cell.	14
3.	Write an account on mechanism of transpiration in plant.	14
4.	Give an account on mechanism of fruit ripening process and its control.	14
5.	Explain physiological and molecular basis of plant responses to pathogen and herbivores.	14
6.	Answer any two of the following:	14
	a) Write a note on properties of water.	
	b) Application of Gibberellins.	
	c) Role of biofertilizers in plant growth.	
	d) Factors affecting of seed germination.	
7.	Answer any two of the following:	14
	a) Cytokinins in plant	
	b) Seed certification	
	c) Poultry farming.	

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Seat	
No.	

c) Vegetable oils

# M.Sc. (Part – II) (Semester – IV) Examination, 2015 GENETICS Paper – IV: Industrial Biotechnology and IPR

Paper – IV : Industrial Biotechnology and IPR (New – CGPA Pattern)

Day and Date: Thursday, 23-4-2015 Max. Marks: 70 Time: 3.00 p.m. to 6.00 p.m.

- **N.B**: 1) Part I question 1 is compulsory.
  - 2) Attempt any four questions from Part II.
  - 3) Figures to the **right** indicate **full** marks.
  - 4) Answer to the **two** Parts should be written in the **same** answer book.

#### PART - I

d) Citric acid

1. Rewrite the sentences after choosing the correct answer from the given alternatives. 1) Cell number or biomass of batch culture exhibits curve of a) J-shape b) C-shape c) S (sigmoid) d) None of these 2) Intellectual properties are a) Physical properties b) Tangible properties c) Product of mind d) None of these 3) Books and dramatic writings can be protected through a) Copy right b) Patent c) Trade secret d) Trade mark 4) \_\_\_\_\_ of the following is not used as antifoaming agent. a) Lard oil b) Silicon derivatives



5)	is not specifically pro	otected by intellectual property legislation.				
	a) Trademarks	b) Patents				
	c) Copyright	d) Trade secrets				
6)	In anaerobic sludge digestion	is the major gas released.				
	a) Hydrogen	b) Methane				
	c) Nitrogen	d) Oxygen				
7)	Submerged fermentations are					
	a) Batch fermentation					
	b) Continuous fermentation					
	c) Batch as well as continuous fermentation					
	d) None of these					
8)	Upto the production of desirable production in the fermentor is called as					
	a) Upstream process	b) Downstream process				
	c) Surface fermentation	d) None of these				
9) Under steady state specific growth rate is controlled by						
	a) dilution rate	b) addition of substrate				
	c) both	d) none of these				
10)	is described as best secondary metabolite.					
	a) Acetic acid produced from the oxidation of ethanol					
	b) Ethanol from the fermentation of glucose					
	c) Penicillin					
	d) Citric acid from the partial oxidation of glucose					
11)	are present in the fermentor to avoid the vortex formation.					
	a) Impeller	b) Baffles				
	c) Sparger	d) All of these				
12)	biological material is granted patent in India.					
	a) Basmati rice	b) Turmeric				
	c) Both a) and b)	d) None				



13) The objective of mixing in fermentor are to

		a) Disperse the air bubbles				
		b)	To suspend the micro organ	ism		
		c) To entrance heat and mass transfer				
		d)	All of the above			
	14) year's amendments to the Indian parent law allows the protection of biological material.					
		a)	2003	b) 2005		
		c)	1919	d) 1990		
				PART – II		
2.	De	esci	ribe in detail the basic design	of fermentor.	14	
3.			ribe stepwise the different me ment Plant (ETP) and its sign	thods with their mechanisms used in Effluent ificance.	14	
4.			ribe the various criteria used v d add a note on rheology.	when a process of formulation media is going	14	
5.	Att	tem	npt <b>any two</b> of the following:		14	
	a)	Pa	atenting of Biological Materials	S		
	b)	Gi	ve the characteristics of bios	ensors.		
	c)	Pr	inciples of Bioaugmentation v	vith suitable example.		
6.	Att	tem	npt <b>any two</b> of the following:		14	
	a)	Gi	ve the characteristics of bios	ensors.		
	b)	Co	omputer control systems in fe	rmentors.		
	c)	Er	nergy crisis and non convention	onal energy sources.		